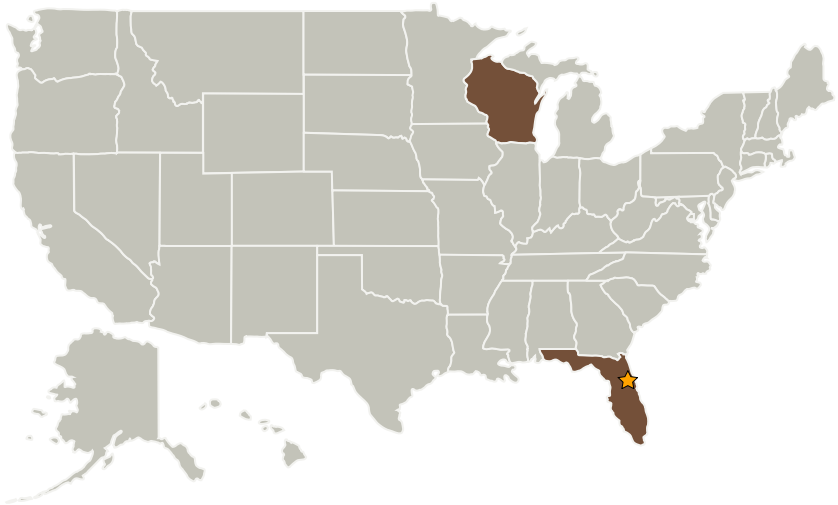
Aseptic Plant Culture System (APCS), Phase I

Completed Technology Project (2004 - 2004)

Project Introduction

Aseptic plant culture plays a significant role in biotechnology and plant physiology research and in vegetative propagation of many plant species. The development of an Aseptic Plant Culture System would provide a mechanism for experimentation as well as for transporting and storing vegetatively propagated plant material in space. Most culture systems are passive, with no environmental monitoring or control. This project proposes to develop a full environmental control and monitoring system for aseptic culture that can accommodate, without modification, a variety of standard culture vessels. The system would consist of a base unit into which culture vessels can be plugged or unplugged as desired. Multiple culture vessel sizes and shapes could be accommodated using a generic connector system. Environmental parameters controlled and monitored would include light level and spectral quality, photoperiod, air and media temperature, humidity, and atmospheric composition. Using innovative, high precision miniature environmental control components would allow each vessel to maintain independent control set-points if desired. Particular challenges include development of a miniaturized humidity control system, precise control of the gaseous environment in small volumes, and maintaining sterility for an extended duration.

Primary U.S. Work Locations and Key Partners



Aseptic Plant Culture System (APCS), Phase I

Table of Contents

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Kennedy Space Center (KSC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Aseptic Plant Culture System (APCS), Phase I

Completed Technology Project (2004 - 2004)

Organizations Performing Work	Role	Type	Location
★Kennedy Space Center(KSC)	Lead Organization	NASA Center	Kennedy Space Center, Florida
Orbital Technologies Corporation	Supporting Organization	Industry Women-Owned Small Business (WOSB)	Madison, Wisconsin

Primary U.S. Work Locations	
Florida	Wisconsin

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Robert Morrow

Technology Areas

Primary:

- TX06 Human Health, Life Support, and Habitation Systems
  - TX06.3 Human Health and Performance
    - TX06.3.5 Food Production, Processing, and Preservation